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S E C R E T

COUNTRY Hungary

## REPORT

**SUBJECT**

DATE DISTR.

2 April 1957

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Description and Sketches of the Uranium Mines at Kővágószőlős

**NO. PAGES**

1

**REQUIREMENT NO.**

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## REFERENCES

DATE OF INFO.

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DATE ACQ

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description and various sketches of  
the uranium mines at Kővágószőlős, near Pécs.

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H U N G A R YScientificThe Uranium Mines at KOVAGOSZOLLOS near PECS

1. Description of the area in which Uranium Mining  
is carried out. Sketch 1

KOVAGOSZOLLOS and the surrounding area lies at the foot of the MECSERKESZBALCS mountains. The village lies in a west to east direction, and can easily be recognised by columns of red sandstone situated on the northern outskirts. These columns known locally as "stone babies" (KO BABAK) are several thousand years old, their height varies from 10 to 40 meters, in width about 8 to 10 meters, and the length of the area of the columns is about  $1\frac{1}{2}$  kilometers. Above the columns is a memorial to an aeroplane which crashed in 1951.

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 it was consequent upon the investigation of this crash that URANIUM was found in the area.

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The first shaft to the uranium mines is situated  $1\frac{1}{2}$  kilometers from the outskirts of the village in a southern direction, and is known to the Mining Geological Directorate as Shaft II. All the extraction in the area is carried out here at present. The mined ore is carried in skips (trams) (small trucks) in an easterly direction to the weighing machine where the ore is examined for its specific gravity and quality. It is then taken via the distributor to one of three places. The good quality ore goes to Nos. I and II and the worst to No. III dump.

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Shaft No. I lies 200 meters south of Shaft II but due to flooding it is not in use.

Shaft No. III is at present being constructed, and when completed will be the main shaft out of which most of the ore will come. It is situated approximately 500 meters south-east of No. I shaft. It is estimated that this shaft will yield about 1000 skips containing  $0.6m^3$  ore per day. The depth of the shaft as at 7.11.56 was approximately 80 meters.

Shaft No. IV which according to the plans is scheduled to be completed in May, 1957, will be used to ventilate the whole mine using a turbine. It is situated approximately  $2\frac{1}{2}$  kilometers north-east of No. II shaft.

## 2. Direction of Ore Beds

According to the Geological Research Department of the Mining Directorate, the uranium beds take a north-westerly direction from Nos. I and II shafts, and after about 8-10 kilometers take a south-westerly direction. According to the latest geological research results a further uranium bed lies to the east of the outskirts of the village.

Further exploration is being carried out in VESZPREM, in the north district of the Lake BALATON and in the SOPRON area. [redacted]

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[redacted] this exploration is carried out by "Nos. 1-2 Soviet Expedition" with good results.

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## 3. Description of soil of the Uranium Mine

A. The top layer of soil is mostly a mixture of clay and stones which at one time formed the bed

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of the sea. It is most suitable for growing grapes, and the wine produced from these grapes is considered the heaviest and strongest wine in the country.

B. Under the top layer there is a layer of red rusty coloured thin sand extremely rich in iron, mixed with crushed broken stones. The thickness of this layer is about 30-40 meters.

C. Under the layer of soil indicated in paragraph 'B' above, there is a layer of solid, from 4-7 degrees of hardness, red sandstone which is rich in iron. This layer also contains a mixture of small quantities of lead, bauxite and large quantities of quartz (SILICAT). In various parts of this layer the colour changes to lilac-dark reddish to a brownish colour. Where these colour changes occur the thickness of the layer varies between 1-70-80 meters. The iron content of the soil is indicated by rusty coloured veins, and in the red stone, sediments of calcite (CALCIT) can be found.

D. Generally the red stone layer is followed by a layer of greenish-greyish mush-like mixture of clay and sandstone which when crushed in the hand is similar to sticky clay or putty with the difference that whereas the clay is brown, the colour of this is whiteish-greenish grey.

this is the layer covering the bed where uranium is found, but even in this layer of soil large quantities of uranium ore have been found.

so-called "KOVALD" material as well in this layer. (? Pyritis ? Flint)

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[redacted] so-called "KOVASAV"

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(literal translation - silicic acid) was also

found [redacted]

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[redacted] The thickness of this layer varies from 20 centimeters to 5-6 meters, in places even thicker.

E. The above mentioned layer is followed by a layer of black clay top slate (~~PEKETE~~ AGYAG FEEDO PALA) the thickness of which varies at places from 1 meter to a few millimeters. This separates the hard grey-greenish coloured ore which contains large quantities of uranium from the layer of greenish-greyish-whiteish mushy substance of above. The black clay contains layers of slate plates which drain off large volumes of water into the mine. The geologists found that this water was unfit to drink, was contaminated and caused illness, and was extremely hard. [redacted]

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[redacted]  
[redacted] The clay layer itself is a mixture of slate, coal, clay pressed together under great pressure which has caused it to form into slabs. The geologists also state that it contains some lead.

F. Under this layer lies the greenish-grey very hard, 6-7 degrees of hardness, (in parts even higher) layer of ore rich in uranium. This layer due to its exceptional hardness is most difficult to split or blast. This layer of stone contains the even harder or softer uranium lenses. The direction of tilt of these lenses varies considerably.

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There are places where they are horizontal but in no case do they exceed the angle of 75 degrees to the horizontal, which represents the limit at which mining is possible. The size of the lenses also varies. The general direction however, of the lenses is in a north-south and north-west south-east direction. In the beds many breaks can be found, (VETOK) (See bottom of Sketch No. 4) which have been caused at some time or other by earth movements, earthquakes, etc. Their thickness also varies in size, from 60 centimeters but not more than 5 meters. There are beds which in mining language are called "STANDING or STATIC" beds (ALLO TELEP) (beds without any slant) and the thickness of these is uncertain.

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some of these beds continued after smaller breaks.

G. According to the results of all borings carried out it has been ascertained that there are two beds in the area one immediately beneath the other.

H. The Geiger-Muller readings reached their maximum in the neighbourhood of the sandstone which was greenish-grey containing glittering rusty black particles. Here the Russian instrument with a "No. 2" measuring position and lead-shielded indicator measured as high as 40-80 degrees. The material itself (uranium) naturally could not be seen.

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the Uranium itself can be found in larger quantities along the direction of, and on the walls of, the break. In the stone layer itself smaller

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quantities of uranium were found.

I. MINING

The ore bearing bed is only mined selectively. Generally, if from one pit 50 skips were delivered ( $0.6\text{m}^3$  per skip) 16-18 would be good material, the rest being useless. Most of the ore was hauled to the surface but small quantities were used for filling in purposes, such as filling in small trial tunnels, filling in space behind the pit-props, etc.

J. BLASTING AT THE ORE-FACE

A complete and detailed explanation of the methods used for blasting at the ore face is on Sketch No.2.

K. For a description of the method of mining see Sketch No. 3.

L. For a description of ore disposal see Sketch Nos. 3 & 4 in connection with 1.

M. With regard to Sketch No. 4.

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the lenses were positioned in various ways, singly, attached or apart, one above the other, or one under the other or in the so-called "VETO" (literal translation = "CAST") position as drawn at the bottom of the Sketch. The sizes also varied, some were as small as the size of a clenched fist.

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N. Sketch No. 5 demonstrates where uranium is found in rich quantities along the direction of the crack.

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SKETCH NO. 2

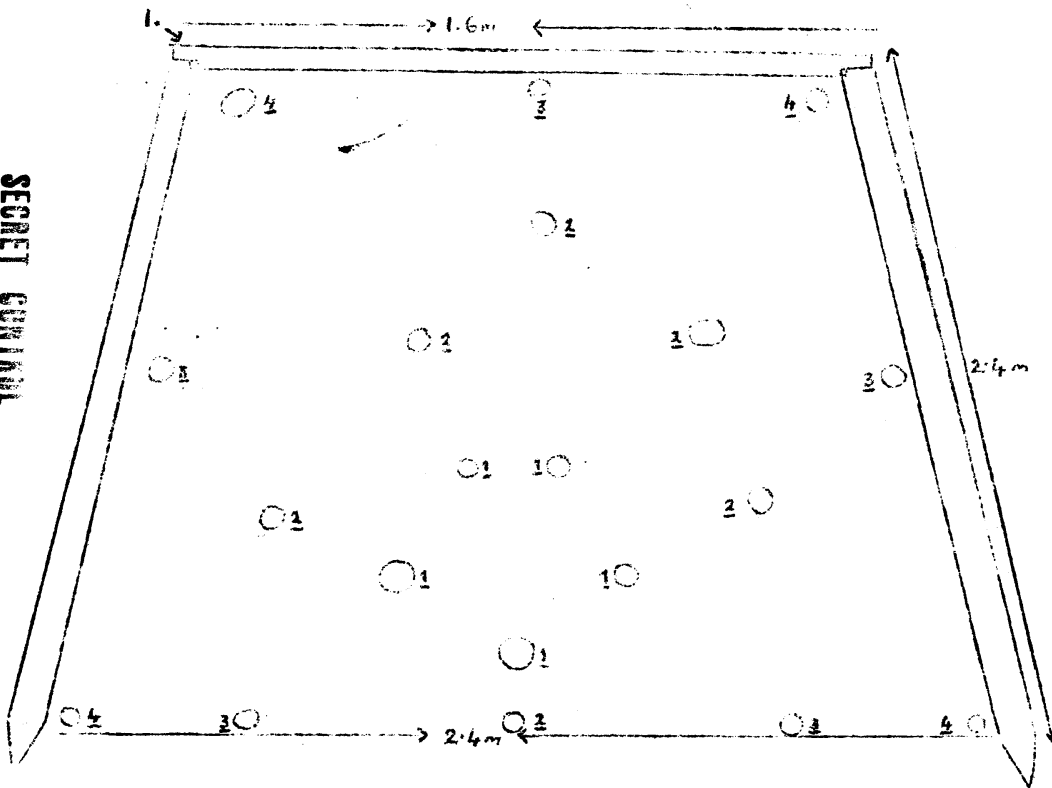
1. Ore face ready for blasting.
2. 1 Main blasting holes, breakers 1.5 m in depth
3. 2 Small ring, depth of hole 1.3 m.
4. 3 Helpers, depth of hole 1.3m.
5. 4 Corner blasters, depth of hole 1.3m.

Amount of explosive in each hole  
 1=16 sticks of paxit (1 stick 10dkg.)  
 2=24 " " "  
 3=25 " " "  
 4=24 " " "

The result of blasting is approximately 80% and ore is extracted to depth of 1.30cm - 1.04cm.

Blasting is carried out electrically with time fuses, timed to explode instantaneously, 1/100th of a second, 3/100th of a second and 5/100th of a second.

The order of blasting is 1-2-3-4.



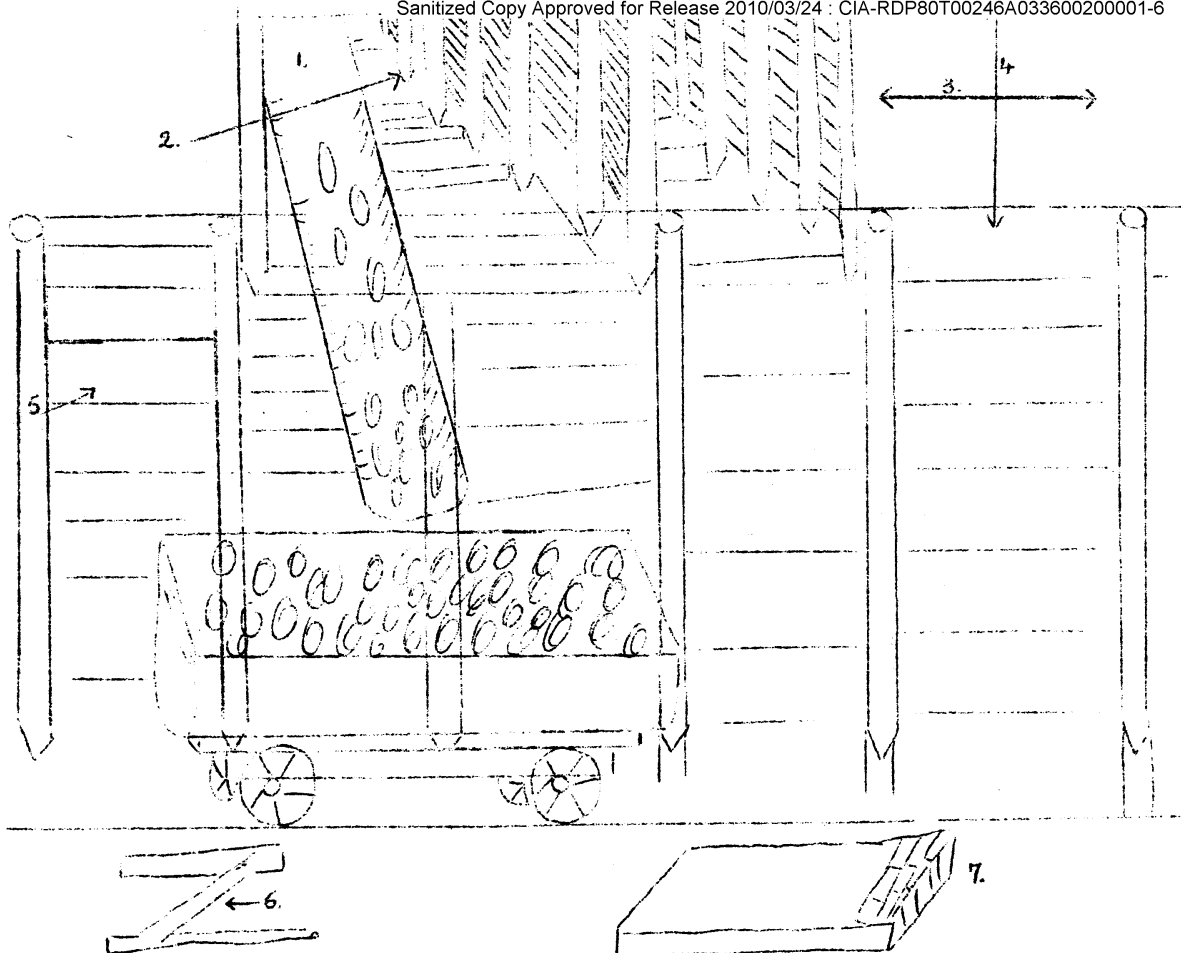
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Sketch No. 3

METHOD OF MINING

1. Rolling shute
2. New tunnelling
3. Old disused tunnel
4. Ore bed
5. Main supporting base
6. Illustration of ore bed
7. Progress in mining on ore bed



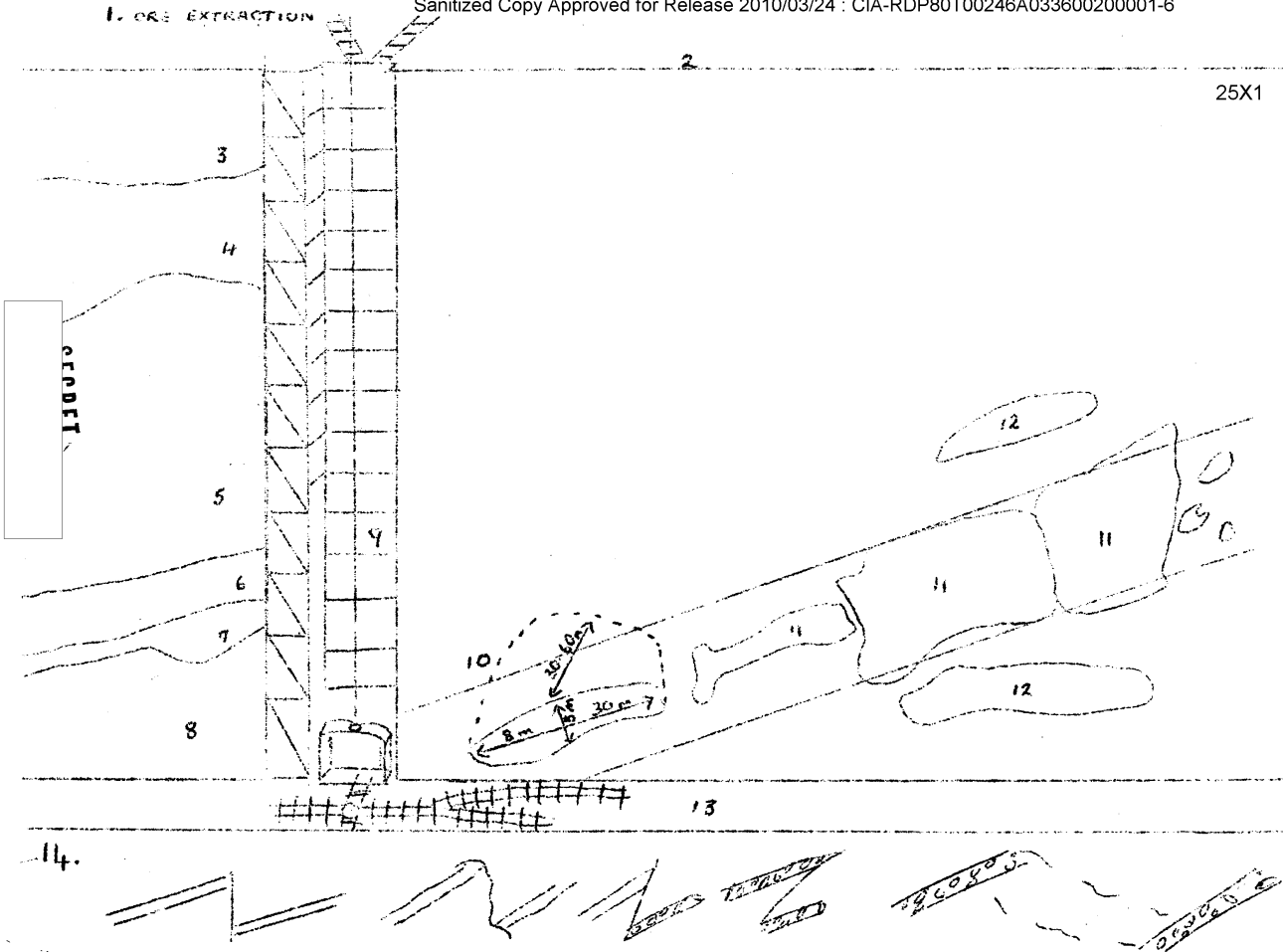
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1. ORE EXTRACTION

Sketch No. 1 25X1

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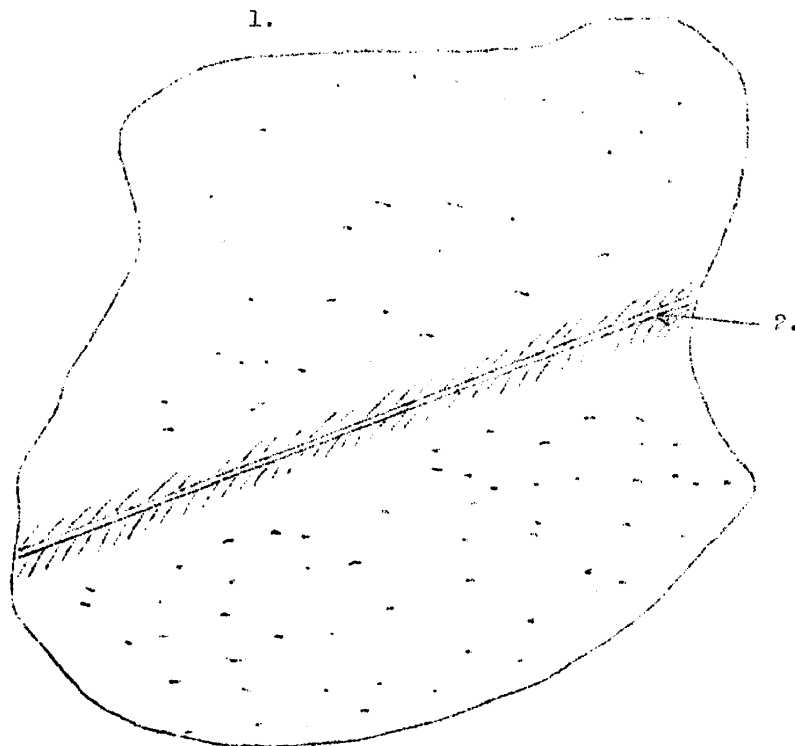
1. Ore extraction
2. Ground Level
3. Surface Agricultural soil
4. Sand
5. Red Sandstone
6. Grey-green
7. Clay-slate
8. Uranium bed
9. Shaft
10. Uranium lense demonstrating depth.
11. Uranium lenses in bed in irregular position.
12. Some lenses occur above & below the main bed.
13. Main delivery tunnel
14. Configurations of ore bearing beds.



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SKETCH No. 5

1. Position of Uranium in the ore bed.
2. Position of uranium along the crack in the rock.

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